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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,807	05/14/2001	Fujio Tanaka	1217-010754	8883

7590

05/18/2004

Russell D. Orkin  
700 Koppers Building  
436 Seventh Avenue  
Pittsburgh, PA 15219-1818

EXAMINER
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CINTINS, IVARS C

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/854,807

Applicant(s)

TANAKA ET AL.

Examiner

Ivars C. Cintins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Wendel (U.S. Patent No. 3,975,267) in view of Kozak et al. (U.S. Patent No. 5,393,416), further in view of Kunin et al. (U.S. Patent No. 6,340,712). As pointed out in the previous Office action, Wendel discloses regenerating an ion exchange resin with a downward flow of regenerant solution (col. 4, line 32) and subsequently rinsing this resin (col. 4, lines 29). This reference further teaches (see col. 4, line 30; and col. 6, lines 57-61) that the regenerant must be passed through the resin at least twice. Accordingly, this primary reference discloses the claimed invention with the exception of using ultra-pure water to rinse the regenerated resin in an upward direction, and the space velocity of regenerant and water (claim 2). Kozak et al. teaches (see col. 17, lines 19-29) rinsing an ion exchange resin column with deionized water in an upward direction; and it would have been obvious to one of ordinary skill in the art at the time the invention was made to rinse the regenerated resin of Wendel in an upward direction, in order to remove any residual regenerant in this resin. Also, Kunin et al. teaches rinsing an ion exchange resin with ultra-pure water (col. 6, lines 2-3); and it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the ultra-pure water of Kunin et al. to rinse the regenerated resins of the modified primary reference, in order to minimize contamination of these resins. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to treat the resin of the thus modified primary

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reference with the regenerant and ultra-pure water at the space velocities recited in claim 2, in order to ensure adequate contact between the resin and these fluids.

Claims 3 and 4 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Wendel, Kozak et al. and Kunin et al. as applied above, and further in view of Saieva (U.S. Patent No. 4,652,352). As pointed out in the previous Office action, the modified primary reference discloses the claimed invention with the exception of the specific material from which the processing equipment is constructed. Saieva discloses (see col. 5, line 33) employing an ion exchange resin column constructed from a vinyl chloride resin (i.e. PVC); and it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct the column and other parts of the modified primary reference system from such a vinyl chloride resin, in order to obtain the advantages associated with this material (e.g. non-corrosive environment, lower construction costs, etc.) for the system of the modified primary reference.

Applicant's arguments filed February 5, 2004 have been noted and carefully considered are not deemed to be persuasive of patentability. On page 3, third paragraph, of the above noted response, Applicant points out that Wendel teaches backwashing or pre-rinsing the resin to cleanse it; and then argues that the regeneration method according to the present invention is not concerned with this type of treatment. It is pointed out, however, that this backwashing or pre-rinsing treatment is applied to the resin prior to its regeneration, i.e. to prepare it for regeneration, and is therefore not precluded by the "consisting of" language in line 2 of claim 1, since this language only applies to the regeneration steps.

Applicant also argues that the rinse treatment of Wendel is applied after the regeneration treatment. Again, this argument has been noted and carefully considered, but is not deemed to

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be persuasive of patentability. It is pointed out that since Wendel employs multiple regeneration treatments with different regenerant concentrations (see col. 6, line 56 through col. 7, line 7), it would have been obvious to one of ordinary skill in the ion exchange art to rinse the resin between these different regeneration treatments, in order to remove the prior regeneration liquid from the resin before the next regenerant is passed through the resin, thereby preventing cross-contamination of regenerant solutions.

Applicant also argues that Wendel fails to disclose a flow direction for rinsing. It is pointed out, however, that Kozak et al. provides the teaching of upflow rinsing (see col. 17, lines 19-29); and it would have been obvious to one of ordinary skill in the art at the time the invention was made to rinse the regenerated resin of Wendel in an upward direction, since this upward flow of rinse water is capable of removing residual regenerant from the resin, as required by Wendel (see col. 4, lines 24-26).

Applicant also argues that Wendel teaches pressurization in combination with step wise regeneration, and that the presently claimed invention does not include this pressurization. Once again, this argument has been noted and carefully considered, but is not deemed to be persuasive of patentability. It is pointed out that since claim 1 recites, "a step comprising passing an aqueous solution of regenerant ..." (see lines 4-5), and since the pressurization treatment of Wendel is carried out as part of the "passing" step, i.e. to reduce resin expansion and provide full and complete contact of regeneration liquids with the resin (see col. 4, lines 49-55), this pressurization treatment is not deemed to be precluded by the language of claim 1. Alternatively, this pressurization treatment could be considered part of the recited "packing" step, since it clearly causes the resin beads to "pack" together, thereby preventing their expansion.

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Applicant also argues that the present invention requires packing the ion exchange resin in a regeneration tower, and that this regeneration tower is different from the purifier tower. This argument is not deemed to be persuasive, since (1) the claims do not recite any step of transferring the resin from a purification tower to a regeneration tower; and (2) the tower utilized by Wendel during the regeneration procedure is clearly a "regeneration tower" at this point.

The argument that Wendel uses alkali materials such as NaOH and acid material such as HCl in the disclosed process, whereas the present invention does not use these materials, is not understood, since the claims in this application clearly do not preclude the use of these regenerants.

Applicant also argues that Kozak rinses ion exchange resins to remove foreign particles, and does not show resin regeneration. Again, this argument has been noted and carefully considered, but is not deemed to be persuasive of patentability. It is pointed out that Kozak is relied upon merely for a showing that it is known to rinse an ion exchange resin with water in an upward direction; and since the rinsing step of Wendel must inherently be carried out in some direction, it would have been obvious to one of ordinary skill in the art at the time the invention was made to rinse the resin of Wendel in an upward direction, in order to remove residual regenerant from this resin.

Applicant also argues that Kunin never includes repeated downward application of a regenerant. This argument, however, is not deemed to be persuasive since the primary reference clearly provides this teaching.

Similarly, the argument that Saieva fails to suggest the recited regeneration procedure is not deemed to be persuasive, since this reference is not relied upon for this teaching. Saieva is

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relied upon only for the teaching of employing an ion exchange resin column constructed from a vinyl chloride resin (i.e. PVC); and it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct the column and other parts of the modified primary reference system from such a vinyl chloride resin, in order to obtain the advantages associated with this material (e.g. non-corrosive environment, lower construction costs, etc.) for the system of the modified primary reference.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to I. Cintins whose telephone number is (571) 272-1155. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Blaine Copenheaver, can be reached at (571) 272-1156.

The centralized facsimile number for the USPTO is (703) 872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Ivars C. Cintins**

**Primary Examiner**

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I. Cintins

May 16, 2004